

What Is Claimed Is:

1. An unheated planar sensor element for determining a concentration of a gas component in a gas mixture, comprising:
 - a first sensor foil composed of a solid electrolyte;
 - a reference-gas channel;
 - a first outer electrode situated on an outer side of the first sensor foil, the first outer electrode being exposed to the gas mixture;
 - a first inner electrode situated on an inner side of the first sensor foil, the first inner electrode being exposed to a reference gas, the first inner electrode being situated inside the reference-gas channel covered on top by the first sensor foil;
 - a second sensor foil covering an underside of the reference-gas channel, the second sensor foil being composed of a solid electrolyte;
 - a second inner electrode situated on an inner side of the second sensor foil, the second inner electrode being situated inside the reference-gas channel; and
 - a second outer electrode situated on an outer side of the second sensor foil, the second outer electrode being exposed to the gas mixture.
2. The sensor element according to claim 1, wherein the sensor element is for determining an oxygen concentration in an exhaust gas of an internal combustion engine.
3. The sensor element according to claim 1, further comprising a foil, and wherein the reference-gas channel is punched out of the foil, the foil being embedded between the first and second sensor foils.
4. The sensor element according to claim 3, wherein the foil having the punched-out reference-gas channel is composed of a solid electrolyte.
5. The sensor element according to claim 1, wherein onto one of the first and second sensor foils the reference-gas channel is applied as a porous layer, and a u-

shaped layer composed of a solid electrolyte, which seals the reference-gas channel from the outside.

6. The sensor element according to claim 5, wherein the u-shaped layer is composed of ZrO_2 .

7. The sensor element according to claim 5, wherein an application of the reference-gas channel and the u-shaped solid-electrolyte layer is implemented using screen-printing methods.

8. The sensor element according to claim 1, further comprising a gas permeable, porous protective layer situated on an upper surface, facing away from the first sensor foil, of each of the first and second outer electrodes.